Work Activity Plan
Crimson Pipeline L.P.
Dominguez Channel Spill

Plan No. 10
Date: October 18, 2011
Activity: Youngstown Lateral French Drain Oil Investigation

1.0 Introduction:

This Work Activity Plan (WAP) has been prepared to investigate the presence of and removal of crude oil within the French drain system along the Alameda Corridor Transportation Agency (ACTA) railroad right-of-way (ROW) in the vicinity of the Youngstown Lateral pipeline and to the Grant Street/Leeds Avenue along on the east and west sides of the ROW. This WAP addresses the logistics of removing surface cover (ballast), exposing the French drain system and the sub-grade beneath the French drain system and to assess and recover any free oil encountered. Information from the activity will aid in determining crude oil migration direction and impacts. Further, the Work Activity Plan describes the methodologies to be used for both vertical and lateral assessment of impacted areas discussed in this WAP.

2.0 Background:

On December 21, 2010, the National Response Center (NRC) received an incident notification of an oil sheen coming from the Dominguez Channel near Wilmington, CA. In response to this notification, an investigation of the area revealed that oil was present in the Los Angeles City storm drain system in the vicinity of Leeds Avenue and Grant Street, in the City of Wilmington, California. Upon further investigation, oil was found to have entered the storm water system from an outfall of the ACTA railroad ROW storm water drainage system (French drain).

During a March 2011 investigation conducted on behalf of ACTA and Crimson, oil was also observed in the east and west French drain systems where the Youngstown Lateral intersects beneath both conveyance trenches. Oil from the west side migrated south through the French drain and onto the Shell Lubes Plant property and into the onsite storm water before being discharged to the Shell Lubes Plant storm water retention basin. It is believed that oil on the east side migrated south through the French drain system where it surfaces to a concrete trench known as the ACTA outfall. The flow of oil from the apparent source area is intermittent and related to rain events that cause flow in the storm water systems (ACTA, January 2011).

3.0 Scope of Work:

Crimson proposes to investigate and recover oil found in the French drain. The French drain system is comprised of a trench approximately 30 inches deep and 24 inches wide that is excavated into the railroad sub-ballast. A geotextile fabric (filter fabric) is placed into the trench covering the bottom and sides with sufficient material at the top of the trench to cover the trench fill materials. Pea gravel is placed approximately 2 inches deep in the bottom of the trench. An 8 inch diameter PVC pipe with holes to allow fluids to move into and out of the pipe is placed on top of the pea gravel. The trench is then filled with pea gravel to the top and the filter fabric placed over the pea gravel to enclose the trench.

Field observations from the March 2011 investigation and from the work activities performed in the area of the Shell Lubes Plant in October 2011, confirmed the presence of crude oil in at least three locations along the ROW; 1) On the west side of the ROW in the vicinity of the Youngstown Lateral pipeline, 2) On the east side of the ROW in the vicinity of the Youngstown Lateral pipeline, 3) to the north of the Shell Lubes Plant on the west side of the ROW. Crude oil may be present in other areas along the ROW as well. Crimson prepared WAP #7 which is intended to investigate the French drain system along the east and west sides of the ROW for the presence of crude oil.

Crimson is proposing to investigate the areas describe above to delineate these source areas for free oil and to remove any oil found within the French drain and underlying sub-grade. The following provides a discussion of the proposed scope of work:

Prior to the commencement of fieldwork activities, Crimson will visit the Youngstown Lateral and intersecting ROW to mark the proposed investigation locations and acquire an Underground Service Alert (USA) ticket number prior to commencement of any drilling activities. All activities will be coordinated with ACTA and Balfour Beatty (BB). Balfour Beatty will be tasked with schedule the closure of either rail #1 or rail #3 in order to perform the proposed work within the ROW. All fieldwork activities will be approved ACTA and BB prior to commencing field work.

In accordance with federal OSHA regulations (29 CFR, Section 1910.120), Crimson has attached a site specific Health and Safety Plan (HASP) for the investigation activities (Appendix A). All Crimson personnel and subcontractors associated with the project will be required to be familiar with, and comply with, all provisions of the HASP.

Crimson will supervise and direct all onsite activities. All work will be conducted under the supervision of a licensed California Professional Geologist or Engineer.

3.1 Railroad Right of Way Investigation

The French drain lines will be surveyed to confirm stationing locations identified on ACTA's as built drawings for the rail system. The survey markings will be used to identify and record areas of impact along the French drain system. All work activities, including soil sample locations and field notes, will be referenced to the surveyed stations. The locations will be incorporated into the project geographic information system (GIS) database.

The removal of the ballast material and the French drain investigations are proposed to begin at the Youngstown Lateral where the western and eastern French drain lines intersect the pipeline (Figure 1). Ballast material will be removed along the French drain in approximate 15' sections. The amount and exact length of the ballast material removal will be determined by BB, based on the train traffic schedule for the railroad ROW. BB's detailed procedures for removal, replacement, and inspection of the ballast material are presented in Appendix B. Balfour Beatty and/or their subcontractor will be responsible for all removal, replacement, and inspection activities related to ROW ballast for this project.

Removal of ballast material will continue north and south along the French drains in 15 feet increments until oil that is recoverable can no longer be removed. If free oil continues to be encountered more than 100 feet to the north or south, investigations may be concluded to allow for consideration of alternative strategies for addressing oil recovery.

In addition to the investigation and removal of oil in the areas discussed in this WAP, investigation activities for the full length of the French drain system are addressed in WAP #7.

If areas of free oil are identified from the WAP #7 investigation, this WAP will be amended to address the removal of free oil at the locations therein. If free oil is not found within either French drain system, the oil removal activities and assessment associate with this work plan with be concluded upon completion of the work described herein.

Ballast material and gravel that is visually impacted with free crude oil will be recorded in the field notes and removed. If complete removal is not possible, residual impacted areas will be recorded and described in the field reports. No impacted sub-ballast material will be removed during this phase of the project. All impacted material removed will be transferred via vacuum trucks to the Leeds and Grant Staging area and managed in accordance with Section 4.0 of the Project Plan.

Once the French drain system has been exposed, a determination will be made as to the presence of crude oil and the potential impact. Where free crude oil is visually identified, vacuum equipment will remove the oil to avoid further migration down the French drain system. Soil samples will be collected from accessible areas beneath the French drain system and geotextile fabric using manual sampling methods that will include drive samplers and hand augers. Soil samples along the western and eastern side of the French drain system adjacent to the railroad track will be collected to confirm the vertical limits of impact beneath the French drain, gravel and geotextile conveyance system. Soil samples will be collected from safely accessible locations as described below:

- Soil samples will be collected adjacent to the existing French drain and/or and utility piping revealed.
- One soil boring will be advanced every 20 feet along the French drain system where crude oil impacts are reported.
- One soil boring will be advanced where known utility laterals intersect the French drain system.
- Soil samples will be collected from 0.5 foot and 2.0 feet below the bottom of the French drain at each boring location. If impacts are evident in the two-foot sample, deeper samples will be attempted.
- Field PID measurements for VOCs will be made and recorded from all soil samples.
- Sample locations and depths may be modified and will ultimately be determined by encountered field conditions.
- Subsurface conditions will be continuously logged and samples will be collected to confirm the vertical limits of impact. At least two soil samples will be collected for analysis: one within the contaminated portion of the soil column and one below observed impacts to assess the limits of impact.
- Where the bottom of the French drain consists of exposed concrete or cemented ballast, no sample will be collected and a visual assessment will be conducted to ascertain the need for removal based on evidence of free oil.

4.0 Soil Sampling Procedures

4.1 Drive Sampler and Hand Auger

Soil samples along the French drain system will be collected using a hand auger and drive sampler. Hand auger borings will be advance to 2 feet bgs or until refusal. During hand auguring or drive sampling, soil samples will be collected with brass sample tubes or glass containers.

Soil samples will be transferred to 4 or 8-ounce glass jars. All soil samples will be recorded on field logs along with a description of soil characteristics following the Unified Soils Classification

System (USCS).

5.0 Decontamination and Abandonment

To maintain quality control during sampling operations, all sampling equipment will be cleaned using an Alconox or Liquinox (or equivalent) scrub solution, followed by a double-rinse, first in tap water followed by a final rinse using distilled water. Sampling equipment will be decontaminated prior to each sampling interval. Additionally, the rods sections will be decontaminated between sampling locations to prevent cross contamination from one boring to the next.

6.0 Laboratory Analysis

Investigation samples may be analyzed for one or more of the following:

- TEPH-full carbon chain — EPA method 8015B
- Volatile Organic Compounds (VOCs) — EPA method 8260B

VOC analyses will be selected based on positive TEPH results. No sample will be analyzed for VOCs where TEPH is not detected above laboratory reporting limits. Samples exhibiting higher concentrations of TEPHs will generally be analyzed for VOCs by EPA method 8260B.

Samples will not be analyzed for SVOCs or Title 22 metals as laboratory analyses of crude oil samples indicated that SVOCs and metals are below concentrations to be considered Contaminate of Concern for the release of crude oil from the Youngstown Lateral pipeline.

Laboratory duplicates, equipment blanks, and other QA/QC sample will be analyzed at a frequency determined as described in SAP.

6.0 Reporting

Upon completion of the French drain oil removal and assessment activities, a report will be developed to present and describe the procedures, protocols, findings, results, and conclusions of the assessment. The report will be submitted to the EPA and will include a discussion of the actual scope of work along with any deletions and/or additions to the scope of work presented in this work activity plan. All results, findings, conclusions and recommendations will be supported with field data sheets, figures, tables and calculations. Field logs, laboratory analytical reports and pertinent correspondence documenting agreements with the EPA will be appended to the report.

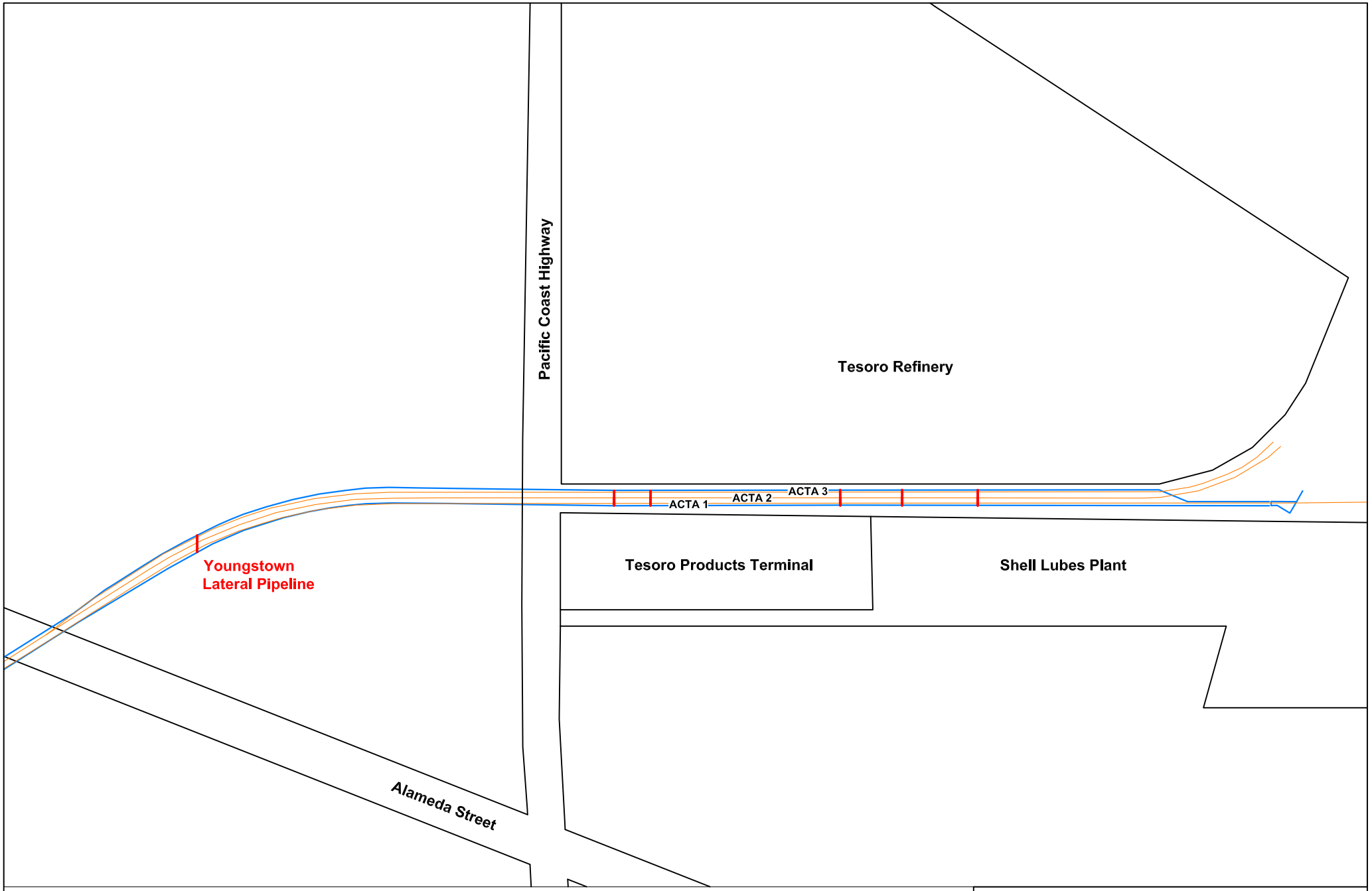
7.0 Timing

Crimson has scheduled the removal of the Youngstown Lateral pipeline for the week of October 24, 2011. It is anticipated that this Work Plan will be the next phase of activities in responding to the Order for Removal, Mitigation or Prevention of a Substantial Threat of Oil Discharge No. OPA CWA 311-09-2011-0002, dated March 30, 2011.

Crimson believes this is the most advantageous area to capture free oil present within this drainage system to alleviate southern migration. Upon approval, Crimson will contact BB and ACTA to schedule the proposed work on the railroad ROW at earliest possible date.

B&B has indicated that a reasonable work schedule can provide access of 75 to 100 feet per day of the French drain system. Given the unknown conditions along the railroad ROW it may take several work days to conduct a full assessment as described in this Work Activity Plan.

FIGURES



Legend:

- ACTA Rail Lines
- French Drain
- Pipeline Casings (slated for removal, existence unknown)

Scale: 1" = 350'

Beacon Energy Services
2685 Temple Ave., Signal Hill, CA 90755, (562) 997-3087

Created by: VM | Date: 10/24/2011

Client: **Crimson Pipeline, L.P.**
Dominguez Channel Oil Spill

Figure No.: Figure 1

Appendix A

Site Safety Plan
Crimson Pipeline LP Dominguez Channel Spill
Oil Removal and Assessment French Drain System
Investigation
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KEY PERSONNEL		
Project Manager	**Jim DeWoody**	951-403-4623
Project Supervisor	**Mark Reese**	714-624-5301
Field Supervisor	**Bill Senner**	310-629-5260
Safety Officer	**Jeff Davis**	562-234-7802

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Date: TBD **Start Time: TBD**

SITE DESCRIPTION	This site specific health and safety plan has been developed to provide a safe work environment for the work to be performed in association with oil removal from the French drain system on the ACTA railroad right-of-way, Wilmington, California.

SCOPE OF WORK	. Site Orientation prior to work assignment (layout, ingress; egress; emergency evacuation procedures, phones) . Conduct oil removal and assessment of the French drain system in accordance with Work Activity Plan #10.

EQUIPMENT	• Excavation equipment (Super sucker vacuum) • Roll off bins • Support vehicles

CHEMICAL INFORMATION (see MSDS)

CHEMICAL / CAS	CHEMICAL PROPERTIES	EXPOSURE LIMITS	ROUTES OF ENTRY	SYMPTOMS
Crude Oil (sour)	□ VD = 3 - 5 □ VP = variable □ S.G. = AP 0.7 to 0.9 □ FP = <73 to >200 F	PEL: 5 mg/m³ as mineral oil mist	Inhalation Ingestion	Eye, nose and throat irritation, vertigo, nausea, dyspnea, central
Benzene	□ S.G. = 0.88 □ VP = 75mmHg □ FP = 12 F □ LEL: 1.2% □ UEL = 7.8%	PEL: 1 ppm IDLH: 500ppm	□ Contact □ Inhalation □ Ingestion □ Absorption	Irrit eyes, skin, nose, resp sys; dizz; head, nau, staggered gait; anor, lass; derm; bone marrow depress;
Hydrogen Sulfide	□ MW = 34.1 □ Sol = 0.4% □ IP 10.4 6eV □ UEL = 44% □ LEL = 4.0%	PEL: 20 ppm IDLH: 100ppm	□ Inhalation □ Contact	Irrit eyes, resp sys; apnea, coma, convuls; conj, eye pain, lac, photo; dizz, head

PERSONAL PROTECTIVE EQUIPMENT

TASK	Level	MASK /CARTRIDGE /AIR	ADDITIONAL PPE
Establish support area / Collection Area	**D**	N/A	Hardhats, safety glasses, coveralls, leather gloves, steel toe boots
ACTA ROW	**C**	Half face respirator w/ organic cartridge : Not Anticipated	Hardhat, safety glasses, Nomex coveralls, steel toe boots, nitrile gloves

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ACTIVITY HAZARD ANALYSIS

Hazards Throughout the Job		
ITEM	**HAZARD**	**PREVENTION**
General Work Area	Slip / trip / fall	• Designated pathways cleared of debris • Use step ladders for platforms requiring climbing up or down • Use care when climbing over retain wall near collection wells
General Work Area –lifting	Strain	• Plan and stage to minimize long distance carrying • Split heavy loads into smaller loads • Use assistant for heavy or awkward load
General Work Area –Traffic	Struck by	• Set up visible barricades on access roads; • Wear high visibility safety vests
ACTA ROW	Stuck by	• ACTA railroad ROW safety procedures must be followed. • Balfour Beatty will provide flagmen and safety personnel for railroad hazards.
Heat stress	Heavy PPE Lack of breeze	• Drink plenty of fluids • Ensure adequate rest periods
Limited ingress and egress	Evacuation	• Identify ingress and egress points at 2 or more locations • Establish meeting area in the event of emergency evacuation

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Hazards Unique to Each Phase of Project		
ITEM	**HAZARD**	**PREVENTION**
Trains on active railway	Struck by train Uneven walking surface	• Must have flagger present at all times to grant access to walk near railway • Reflective orange safety vests must be worn • Must maintain a minimum distance of 25' from track unless track is shutdown • Use caution while walking on rocky surface • Ensure steel toe boots are laced up and secure on ankle
Loading and unloading materials	Material handling	• Plan and stage to minimize long distance lifting /carrying • Split heavy loads into smaller loads • Use mechanical lifting aids when possible • Have assistant for heavy or awkward loads
Flammable Liquids	Smoking	• NO SMOKING on ROW /keep public out of work zone in Collection Area
Confined Space – NOT ANTICIPATED AT THIS SITE	Atmosphere Rescue Ventilation	• If confined space entry is required, Site Safety Officer must prepare and approve entry plan.
Hazardous compounds	Vapors or liquids from crude oil or unknown chemicals	• Monitor for vapors using VOC monitors. • Be prepared to address unknown chemicals that might be exposed during excavation activities • Stop work if elevated levels of vapors are encountered and revise work plan to address hazards.
Human Element	Violence	• Area is known for criminal element hazards • Use buddy system when working outside of secured areas • Avoid confrontation with persons not associated with work area • Use care in travelling to and from work sites • Secure property
Special Conditions	All hazards	• All railroad and ACTA safety procedures must be followed when working on the respective properties

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SAFETY EQUIPMENT REQUIRED:

✓	Eyewash / Shower	✓	Reflective orange vest	✓	Wheel chocks for trucks
✓	First Aid Kit	✓	Fire Extinguisher (A/B/C)	✓	Barricades / rope

TRAINING REQUIREMENTS:

✓	HAZWOPER 40	✓	Hazwoper Supervisor	✓	Current 8 Hour Refresher
✓	First Aid /CPR	✓	Hazard Communication	✓	
✓	Respiratory Protection	✓	Medical surveillance	✓	

DECONTAMINATION AND DISPOSAL

DECONTAMINATION EQUIPMENT	
☒ Visqueen (Ground) ☒ Carpet Strips (Ground) ☒ Decon Pool / wash boots	☒ Rags to wipe boot bottoms ☒ Labeled Drums for disposal items ☒ chairs to sit on for PPE removal ☒ Soap /Water to wash face / hands ☒ Disposable Paper Towels ☒ Caution tape to designate decon area

PERSONNEL DECONTAMINATION PLAN

- ☐ Establish three stage contamination reduction zone with small decon area at exit
- ☐ Lay down visqueen under barrier
- ☐ Place empty lined and labeled drums for contaminated PPE
- ☐ Untape gloves and boots
- ☐ Rinse boots if not using boot covers
- ☐ Sit on chair prior to removing boots or outer PPE
- ☐ Remove boots and outer gloves ;
- ☐ dispose of tape / boots / gloves in labeled drum
- ☐ Unzip suit / pull off hood (if hooded)
- ☐ Roll down suit / inside out and place into labeled container: DO NOT USE KNIVES TO CUT OFF PPE
- ☐ Remove inner gloves
- ☐ PPE and debris will be bagged, accounted for, and bulked into the applicable waste bin

EMERGENCY MEDICAL TREATMENT AND FIRST AID

TYPE CONTACT	FIRST AID
Eyes	• Flush each eyes continuously for 15 minutes; • Tilt head to side to ensure liquid runs onto floor not other eye • refer to EMT for evaluation
Skin	• Remove contaminated clothing immediately • Wash skin continuously for 15 minutes; • refer to physician if redness, swelling, or pain persists after washing
Breathing	• Call 911; • Remove to fresh air immediately; • begin CPR until EMT arrives
Ingestion	• aspiration hazard • do not induce vomiting • do not give anything by mouth

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EMERGENCY RESPONSE PLAN

Attach Map to Nearest Hospital

ELEMENT	LOCATION, SPECIFICATION OR REASON FOR USE
NEAREST HOSPITAL	Pacific Hospital of Long Beach 2776 E Pacific Ave. Long Beach, CA 90806
NEAREST PHONE	Supervisor cell phone
FIRST AID KIT	Supervisor Truck
FIRE EXTINGUISHER	Supervisor truck and charged extinguishers on site
EYEWASH STATION AND EMERGENCY SHOWER	Supervisor will determine location on site or provide 55 gallon drum of water and hand pump
EVACUATION ROUTE / MEETING POINT	To be discussed and diagramed before start of job scope

ACCIDENT / INCIDENT REPORTING

Notification Requirements	
FIRST AID INJURIES REQUIRING MEDICAL TREATMENT VEHICLE ACCIDENT NEAR MISS	▪ Employees immediately report all accidents or incidents to the Field Supervisor and Safety Officer ▪ Site Field Supervisor will immediately notify the Project Manager via cell phone. ▪ If unable to reach the Project Manager, contact Mark Reese at Beacon Energy Services. ▪ If on Shell property notify Shell site operations immediately ▪ Call their cell phones ▪ Safety Officer will provide employee interview guidelines and coordinate an accident investigation either by himself or Project Supervisor ▪ Report all incidents to Crimson Pipeline ▪ Ensure incident documented on Daily Job Log ▪ Determination will be made regarding need for post accident drug testing

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SAFETY PLAN APPROVAL

Site Safety Officer_____ **Date** _____

ACKNOWLEDGMENTS

I have read and understand the topics outlined on all pages of this HASP and will follow all the required safety rules.
****I am aware that I am to sign in at the beginning of the shift and sign out at the end of my shift on the daily safety meeting form.**
I must notify the on site supervisor of any injury /accident/ near miss that I had or observed during my shift**
I understand that I have the right to stop work and report any potential hazards to the Site Safety Officer.
After an injury/accident/near miss is reported, the Site Field Supervisor must call Crimson Pipeline LP

Date	Print Name	Signature

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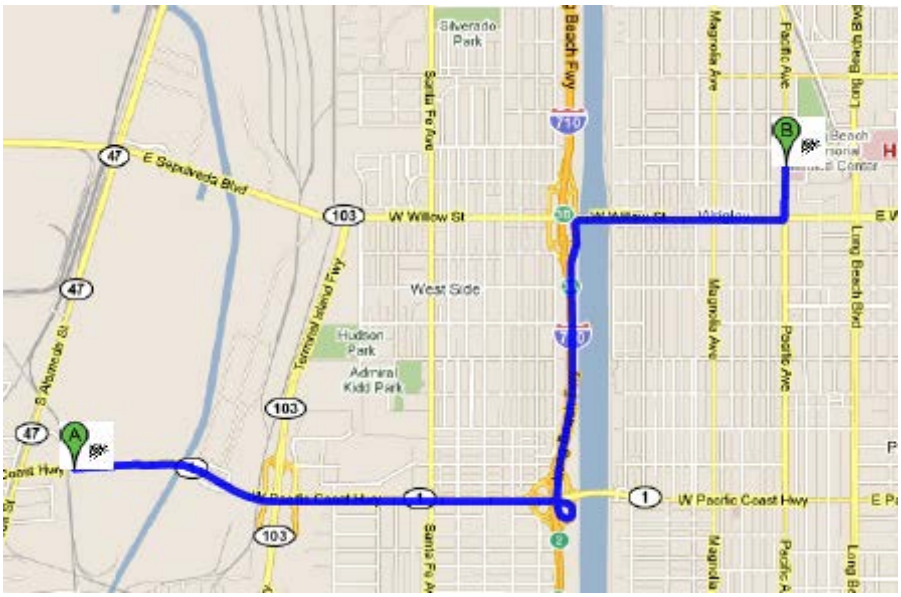
ATTACHMENT A

Medical Facilities



A 1926 E Pacific Coast Hwy, Los Angeles, CA 90744

1	1. Head east on **CA-1 S** About 2 mins	go 1.7 mi total 1.7 mi
710	2. Slight right to merge onto **I-710 N** toward **Pasadena** About 1 min	go 1.0 mi total 2.7 mi
↗	3. Take exit **3A** for **Willow St E**	go 0.2 mi total 3.0 mi
	4. Merge onto **W Willow St** About 2 mins	go 0.7 mi total 3.7 mi
↰	5. Turn left at **Pacific Ave** Destination will be on the right About 1 min	go 0.2 mi total 3.9 mi

B 2776 Pacific Ave, Long Beach, CA 90806

Appendix B

Balfour Beatty Ballast Removal and Replacement Procedures

The following is what would be expected when removing ballast and sub-base down to the drain line elevation on the Alameda Corridor.

Before work starts:

1. Obtain approval from ACTA for all procedures and materials to be used.
2. Submit scope of work to ACTA for approval
3. Meet with ACTA Maintenance contractor to set up track outages
4. Call 811 dig to obtain dig permit number

   Start of work:
5. Daily job briefings with all present
6. Excavation to be done with vac truck down to drain line elevation
7. Soiled ballast and sub ballast to be put in drums and marked for disposal
8. After work at drain line, sub ballast to be put back and compacted with air equipped hand vibrating tool
9. Remaining open ditch filled with clean ballast and compacted
10. Depending on length of excavation, track might possibly need surfacing
11. Track returned to service pending inspection by ACTA Maintenance contractor

Note: Engineering fabric will need to be replaced between sub ballast and ballast sections where it is damaged to the point that it cannot be reused